Summary of FY 17 Assessments Sandia National Laboratories Evaluation of FY16 SNL FCT M2 Milestone Deliverables

Fuel Cycle Research & Development

Prepared for U.S. Department of Energy Used Fuel Disposition Campaign Gordon Appel,
Sandia National Laboratories
March 22, 2017
NTRD-PAC-2017-000348



DISCLAIMER

This information was prepared as an account of work sponsored by an agency of the U.S. Government. Neither the U.S. Government nor any agency thereof, nor any of their employees, makes any warranty, expressed or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness, of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. References herein to any specific commercial product, process, or service by trade name, trade mark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the U.S. Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the U.S. Government or any agency thereof.



Sandia National Laboratories is a multi-mission laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.

Approvals:

Manager

Kevin McMahon <u>Electronic Authentication via email</u> 3/22/2017

Signature Date

Lead Assessor:

Gordon Appel <u>Electronic Authentication via email</u> 3/22/2017

Signature Date

Note: Authentication of the cover sheet for this assessment may be accomplished by transmittal of the signed cover sheet or acknowledging the action via Sandia email, or uploading the documentation to a controlled location on a Sandia network by the authenticator, and marked accordingly.

Page 3 of 16 Final 3/22//2017

1.	. Background	5
2.	. Assessment Purpose and Scope	5
3.	. Milestone Deliverable Requirements	6
4.	Assessment Approach	6
5.	. Assessment of FY16 M2 milestone deliverables	7
	5.1 Is there a FCT Appendix E Document Cover Sheet or Completed PICS:NE Deliverable Formand are they Correct?	
	5.2 Does the FCT Document Cover Sheet (or PICS:NE Deliverable Form) Indicate an Appropria Review?	
	5.3 Is the Milestone Deliverable in FCT-DMS?	7
	5.4 Does the Deliverable have a SAND Number?	7
6.	Assessment Summary	8
7.	. Corrective Actions	8
8.	. Refresher Guidance for current Work Package Managers	8
9.	. Observations	8
A	Attachment 1 – FY 16 Milestone Assessment Plan	. 10
A	Attachment 2 – FY 16 M2 Milestones	. 13
A	Attachment 3 – Concurrence Documentation	. 16

Page 4 of 16 Final 3/22//2017

1. Background

This report is the milestone deliverable M4FT-17SN111102091 "Summary of Assessments Performed FY17 by SNL QA POC" for work package FT-17SN11110209 titled "Quality Assurance – SNL". This report summarizes the FY17 assessment performed on Fuel Cycle Technologies / Spent Fuel and Waste Disposition efforts.

Sandia National Laboratories (SNL) Fuel Cycle Technologies (FCT) and Spent Fuel and Waste Disposition (SFWD) program activities are conducted in accordance with FCT Quality Assurance Program Document (FCT-QAPD)¹ requirements. The FCT-QAPD interfaces with SNL approved Quality Assurance Program Description (SNL-QAPD)² as explained in the Sandia National Laboratories QA Program Interface Document for FCT Activities³ (Interface Document).

As part of the annual work planning process, FCT work package managers designate a Quality Rigor Level (QRL) for each work package. This designation is concurred in by the SNL FCT QA Point of Contact (POC). The QRLs (QRL 1, 2, 3, and 4), and the review requirements for each QRL are specified in the FCT-QAPD and the Interface Document section 10. Sections 11 and 12 of the Interface Document specify a milestone deliverable review and submittal requirements. Upon completion, SNL FCT milestone deliverables are uploaded to the Performance Information Collection System-Nuclear Energy (PICS:NE) or transmitted to the FCT Document Management System (FCT-DMS).

Deliverables uploaded to PICS:NE are automatically copied to the FCT Document Management System (FCT-DMS) in conformance with the FCT Records Management Plan⁴, because PICS:NE is not intended for document management. Note that Sandia's Enterprise Information Management Services (EIMS), is the records management system for SNL documents, not FCT-DMS.

2. Assessment Purpose and Scope

The assessment plan (Attachment 1) describes the assessment approach to evaluate SNL's FY16 FCT Level 2 (M2) milestone deliverable's compliance with program QA requirements, including the SNL document Review and Approval (R&A) requirements. The assessment was planned to confirm that SNL's FY16 milestone deliverables contain the appropriate authenticated review documentation (appropriately signed FCT QAPD Appendix E or completed PICS:NE Deliverable Form) and that there is a copy marked with SNL R&A numbers.

Page 5 of 16 Final 3/22//2017

_

¹Fuel Cycle Technologies Quality Assurance Program Document, Revision 2, December 2012

² Sandia's Quality Assurance Program Description, SNL-QAPD-2016-05-27, Revision 4.3, SAND2015-4512F.

³ Sandia National Laboratories QA Program Interface Document for FCT Activities, Revision 4, September 2015

⁴ Records Management Plan for Fuel Cycle Technologies, FCRD-TIO-2011-000168, Revision 4, November 2012.

3. Milestone Deliverable Requirements

The assessment evaluated compliance with the requirements in Table 1 for SNL FY16 M2 milestone deliverables.

Table 1 Requirements Matrix

Requirement								
Is a FCT Appendix E Document Cover Sheet⁵ or PICS:NE Deliverable Form included?								
FCT Document Cover Sheet (or PICS:NE Deliverable Form) indicates appropriate Review ⁶ ?								
Deliverable is uploaded in FCT-DMS ⁷ ?								
Deliverable in FCT-DMS displays SNL R&A number ⁵ ?								

4. Assessment Approach

The assigned QRL and associated milestone metadata was gathered from either the 'Milestone Activity Detail' or 'Deliverable Approvals' reports from Project Information Collection System for Nuclear Energy (PICS:NE).

PICS:NE and FCT-DMS metadata was compiled in a spreadsheet, which was used to record the results for the milestone deliverable assessment. Screen shots of the spreadsheet for this FY16 M2 assessment are included as Attachment 2.

For each FY16 milestone deliverable, the following was checked in PICS:NE and the FCT-DMS and the results recorded in the spreadsheet.

- Does the milestone deliverable include an authenticated (appropriately signed) FCT QAPD Appendix E sheet *or properly completed PICS:NE Deliverable Form*?
- Is the Cover Sheet or PICS: NE Deliverable Form Correct?
- Is the review indicated appropriate with respect to the assigned QRL?
- Is the milestone deliverable in FCT-DMS?
- Is the milestone deliverable in FCT-DMS marked with the appropriate SNL R&A number?

Page 6 of 16 Final 3/22//2017

⁵ FCT QAPD Section 6.10 and Interface Document Section 11

⁶ FCT QAPD Section 3 and Interface Document Table 2

⁷ FCT Records Management Plan

5. Assessment of FY16 M2 milestone deliverables

The results of the assessment are described below. All 17 FY16 M2 deliverables were evaluated for the above elements. However, this discussion addresses only the twelve UUR⁸ deliverables, because there are multiple reasons why UCI deliverables may not meet one or more of the requirements listed above, or it might not be possible to determine if requirements are met.

5.1 Is there a FCT Appendix E Document Cover Sheet or Completed PICS:NE Deliverable Form and are they Correct?

Of the twelve UUR deliverable documents in this assessment, all had a correct FCT QAPD Appendix E sheet and/or a PICS:NE Deliverable Form.

5.2 Does the FCT Document Cover Sheet (or PICS:NE Deliverable Form) Indicate an Appropriate Review?

Of the twelve UUR deliverable documents in this assessment ten were designated QRL-3 and two were designated QRL-4. Each indicated it had been appropriately reviewed.

5.3 Is the Milestone Deliverable in FCT-DMS?

Of the twelve UUR deliverable documents in this assessment, all were found in FCT-DMS.

5.4 Does the Deliverable have a SAND Number?

Of the twelve UUR deliverable documents in this assessment, all were found to have been formally reviewed and were assigned SAND numbers. These documents were retained in department files. Of the twelve deliverable UUR documents in FCT-DMS, twelve (100%) had SAND numbers. UCI deliverables were also collected in department files. These also indicate appropriate Sandia review.

Page 7 of 16 Final 3/22//2017

_

⁸ UUR (Unclassified Unlimited Release) is the only category of Sandia information that has been approved for public release. Information is identified as UUR only as a result of a Formal Review through the Corporate Review and Approval process. It is not Unclassified Controlled Information (UCI) (Corporate Procedure: IM100.2.5 Identify and Protect Unclassified Information).

6. Assessment Summary

The following summarizes the assessment results:

- There were 17 M2 deliverables for FY16
- The 17 M2 deliverables for FY16 were ORL 3 (14) or ORL4 (3)
- Five deliverables were marked OUO
- 100% (12 of 12) of the UUR deliverables have a correctly completed FCT QAPD Appendix E sheet or a PICs:NE Deliverable Form (see typical PICS:NE Deliverable Form below).
- 100% (12 of 12) of the UUR deliverables were reviewed appropriately with respect to the QRL.
- 100% (12 of 12) of the UUR deliverables are in FCT-DMS
- 100% (12 of 12) have a SAND number on the FCT-DMS copy

7. Corrective Actions

There are no corrective actions necessary based on the assessment.

8. Refresher Guidance for current Work Package Managers

An email will be transmitted to all Sandia FCT Work Package Managers (WPMs) clarifying the important elements requiring their attention when submitting Milestone Deliverables to PICS:NE and completion of the PICS:NE Deliverable Form, based on the outcomes of this assessment. The refresher should urge WPMs to complete the FCT QAPD Appendix E Document Cover sheet, and include it in their milestone deliverables as it is the only lasting evidence of the required review.

9. Observations

It was thought that having the PICS:NE Deliverable Form (Figure 1) would be helpful because it could relieve authors from including the FCT QAPD Appendix E sheet as part of the deliverable document. This was allowable after the advent of the PICS:NE Deliverable Form (mid-2012), and was indeed the principle purpose of the form. The utility of including the PICS:NE Deliverable Form is questionable. Most authors include the FCT QAPD Appendix E sheet as part of the deliverable document. Inattention is evident with respect to completeness/correctness of the PICS:NE Deliverable Form. Several factors contributed to incorrect or incomplete Deliverable Forms, including failure to: check the correct 'Category' radio button, check the box for DOE Order 414.1, check one of the Technical Review radio buttons, and identify Technical Reviewers.

Page 8 of 16 Final 3/22//2017

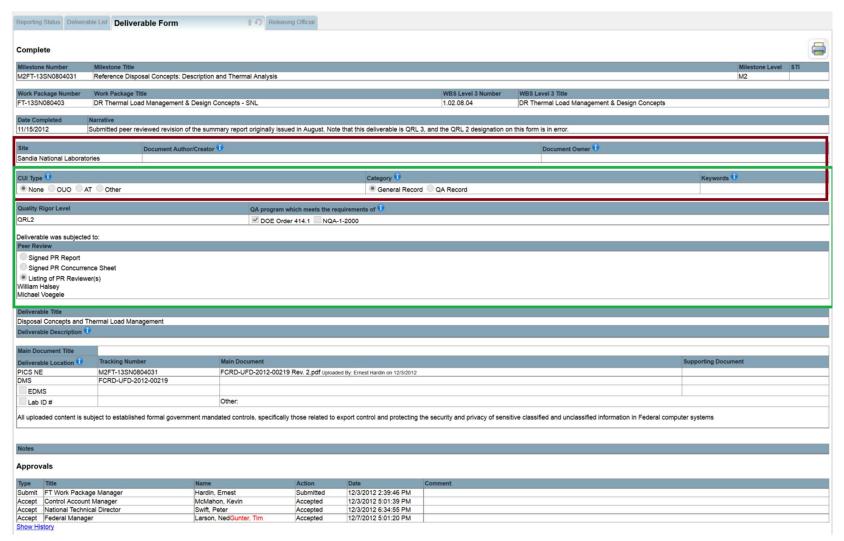


Figure 1 Typical PICS:NE Deliverable Form

Page 9 of 16 Final 3/22//2017

ATTACHMENT 1 - FY 16 MILESTONE ASSESSMENT PLAN

Assessment Plan Sandia National Laboratories Fuel Cycle Technologies Quality Assurance Evaluation of FY16 SNL FCT M2 Milestone Deliverables

Approvals:

Manager

Kevin McMahon <u>Electronic Authentication via email</u> 12/15/2016

Signature Date

Lead Assessor:

Gordon Appel <u>Electronic Authentication via email</u> 12/15/2016

Signature Date

Note: Authentication of the cover sheet for this assessment may be accomplished by transmittal of the signed cover sheet or acknowledging the action via Sandia email, or uploading the documentation to a controlled location on a Sandia network by the authenticator, and marked accordingly.

Page 1 of 3 12/15/16

Page 10 of 16 Final 3/22//2017

Assessment Plan Sandia National Laboratories Fuel Cycle Technologies Quality Assurance Evaluation of FY16 SNL FCT M2 Milestone Deliverables

Background

Sandia National Laboratories (SNL) Fuel Cycle Technologies (FCT) program activities are conducted in accordance with FCT Quality Assurance Program Document (FCT-QAPD)¹ requirements. The FCT-QAPD interfaces with SNL approved Quality Assurance Program Description (SNL-QAPD)² as explained in the Sandia National Laboratories QA Program Interface Document for FCT Activities³ (Interface Document).

As part of the annual work planning process, FCT work package managers designate a Quality Rigor Level (QRL) for the work package. The QRLs (QRL 1, 2, 3, and Lab/Participant), and the review requirements for each QRL are specified in the FCT-QAPD and the Interface Document section 10. Sections 11 and 12 of the Interface Document specify a milestone deliverable review and submittal requirements. Upon completion, SNL FCT milestone deliverables are uploaded to the Performance Information Collection System-Nuclear Energy (PICS-NE). Uploaded deliverables are automatically copied to the FCT document management system (FCT-DMS) in conformance with the FCT Records Management Plan⁴ because PICS-NE is not intended for document storage.

Purpose and Scope

This plan describes SNL's FY17 assessment of SNL's FY16 FCT M2 milestone deliverable's compliance with program QA requirements, including SNL R&A requirements. The assessment is intended to confirm that SNL's FY16 milestone deliverables contain the appropriate authenticated review documentation (appropriately signed FCT QAPD Appendix E or completed PICS:NE Deliverable Form) and that there is a copy marked with SNL R&A numbers.

Requirements

The assessment will evaluate compliance with the following QRL requirements for M2 level milestone deliverables. Note that were no QRL 1 milestones for FY16.

Requirement	QRL 2	QRL3	Lab / Participant QA Program
Includes a FCT Document Cover Sheet ⁵	Yes	Yes	Yes
FCT Document Cover Sheet indicates Peer Review ⁶	Yes	n/a	n/a
FCT Document Cover Sheet indicates Technical Review ⁶	n/a	Yes	n/a
Deliverables is stored in DMS ⁷	Yes	Yes	Yes
Deliverable in DMS displays SNL R&A number ⁸	Yes	Yes	Yes

¹Fuel Cycle Technologies Quality Assurance Program Document, Revision 2, December 2012

Page 2 of 3 12/15/16

Page 11 of 16 Final 3/22//2017

² Sandia's Quality Assurance Program Description, SNL-QAPD-2016-05-27, Revision 4.3, effective May 5/27/2016, SAND2015-4512F

³ Sandia National Laboratories QA Program Interface Document for FCT Activities, Revision 4, September 2015

⁴ Records Management Plan for Fuel Cycle Technologies, FCRD-TIO-2011-000168, Revision 4, November 2012.

⁵ QAPD Section 6.10 and Interface Document Section 11

⁶ QAPD Section 3 and Interface Document Table 2 (Alternatively, is the PICS:NE deliverable form appropriately completed.)

⁷ FCT Records Management Plan

⁸ Section 7.4 of the SNL-QAPD

Assessment Approach

The assigned QRL and associated milestone metadata is gathered from the Project Information Collection System for Nuclear Energy (PICS-NE). For FY16, identification of the SNL milestone deliverables and the associated QRL is largely obtained from the PICS-NE Field Report 'Milestone Activity Detail'. Other milestone details (Milestone/Activity Title, Work Package Manager, Control Account Manager, and National Technical Director) may be added to the Milestone Activity Detail information based on the deliverable Milestone ID Number and the associated information in the PICS-NE Field Report 'Deliverable Approvals'. For FY16 Level M2 Milestone Deliverables, STI and OSTI information will be similarly added to help understand assessment results. This information is compiled in an Excel spreadsheet, and used to record the results for the evaluation of each milestone deliverable.

Evaluation Approach

For each FY16 M2 milestone deliverable the following will be checked and recorded.

- Does the milestone deliverable include an authenticated (appropriately signed) FCT QAPD Appendix E sheet? Alternatively, is the PICS:NE deliverable form appropriately completed.
- Is the review indicated appropriate with respect to the assigned QRL?
- Is there a copy of the milestone deliverable marked with the appropriate SNL R&A number?

Assessment Report

The results of this assessment will be described in a brief report.

Plan Approval

The following copy of an email demonstrates approval of this plan.

 Frem:
 McMahon, Kevin A

 Te:
 Appel, Gordon

Subject: Approve: Plan for FY17 Assessment of SNL FY16 M2 Deliverables

Date: Thursday, December 15, 2016 10:19:51 AM

Thanks for putting this together.

Page 3 of 3 12/15/16

Page 12 of 16 Final 3/22//2017

ATTACHMENT 2 - FY 16 M2 MILESTONES

Level	Milestone ID Number	QRL	Deliverable Title	DMS Tracking Number	Enter SAND#	Deliverable in DMS?	Deliverable in SP?	QAPD Appendix E Form	Deliverable Form / Review Observations	Review Appropriate?	Observation
M2	M2FT-16SN040105051	QRL3	SSBD for Dry Storage Roadmap	FCRD-MPACT-2016-000059	SAND2016-4677	Yes	Yes	Yes-DMS	Deliverable Form OK	Yes	N/A
M2	M2FT-16SN080202051	QRL3	Quantification of Canister Mock-up Weld Residual Stress	FCRD-UFD-2016-000064	SAND2016-6325 R	Yes	Yes	Yes-DMS	Deliverable form: DOE Order 414.1 not marked, otherwise OK	Yes	N/A
M2	M2FT-16SN080204022	QRL3	Test plan for future rail transportation tests	FCRD-UFD-2016-000067	R&A Tracking Number 577399	OUO	Yes	No	OUO - Deliverable Form OK	N/A	Review Form Unavailable
M2	M2FT-16SN080302071	QRL3	Evaluation of Used Nuclear Fuel Disposition in Clay Bearing Rocks	ECRD_UED_2016_000074	SAND2016-10311 R	Yes	Yes	Yes-DMS	General Record not marked, otherwise OK	Yes	N/A
M2	M2FT-16SN080303082	QRL3	Evaluation of Used Nuclear Fuel Disposition in Crystalline Rocks	FCRD-UFD-2016-000076	SAND2016-9297 R	Yes	Yes	Yes-DMS	Deliverable form: DOE Order 414.1 not marked, otherwise OK	Yes	in DMS SAND number marked as 2015
M2	M2FT-16SN080308061	QRL3	Integrated Geoscience Data and Evaluation of Geologic Conditions for the Deep Borehole Field Test Site	FCRD-UFD-2016-000073	Programmatic Review	ouo	Yes	OUO	OUO Deliverable form: QA Record marked, otherwise OK	Yes	QAPD form in document

Page 13 of 16 Final 3/22//2017

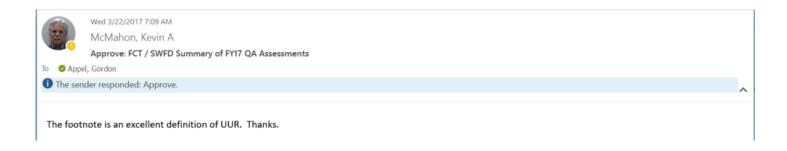
Level	Milestone ID Number	QRL	Deliverable Title	DMS Tracking Number	Enter SAND#	Deliverable in DMS?	in CD2	QAPD Appendix E Form	Deliverable Form / Review Observations	Review Appropriate?	Observation
M2	M2FT-16SN080308071	QRL3	Deep Borehole Field Test Laboratory and Borehole Testing Strategy	FCRD-UFD-2016-000072	SAND2016-9235 R	Yes	Yes	Yes-DMS	Deliverable form: OK	Yes	N/A
M2	M2FT-16SN080308081	QRL3	Deep Borehole Field Test Conceptual Design Report	FCRD-UFD-2016-000070	SAND2016-10246 R	Yes	Yes	Yes-DMS	Deliverable form: OK	Yes	N/A
M2	M2FT-16SN080308091	QRL3	Deep Borehole Field Test Project Plan, Revision 1	FCRD-UFD-2016-000071	N/A	000	Yes	000	Deliverable form: OK	Yes	QAPD form in document
M2	M2FT-16SN080308093	QRL3	Deep Borehole Disposal Safety Analysis	FCRD-UFD-2016-000075	SAND2016-10949 R	Yes	Yes	Yes-DMS	Deliverable form: DOE Order 414.1 not marked, otherwise OK	Yes	DOE Order 414.1 not marked on QAPD form
M2	M2FT-16SN080309031	QRL3	Proceedings from the 6th US/German Workshop on Salt Repository Research, Design and Operations	FCRD-UFD-2016-000069	SAND2016-0194R	Yes	Yes	Yes-DMS	Deliverable form: DOE Order 414.1 not marked, general record not marked, otherwise OK	Yes	QAPD form shows MacKinnon as WPM
M2	M2FT-16SN080501042	QRL4	The On-line Waste Library (OWL): Usage and Status Report	FCRD-UFD-2016-000080	SAND2016-9485 R	Yes	Yes	Yes-DMS	Deliverable form: QA Record marked, otherwise OK	QRL-4 marked and reviewed as QRL-3	N/A

Page 14 of 16 Final 3/22//2017

Level	* INCOME AND ADDRESS HOUSE AND ADDRESS OF THE PARTY OF TH	QRL	Deliverable Title	DMS Tracking Number	Enter SAND#	Deliverable in DMS?		QAPD Appendix E Form	Deliverable Form / Review Observations	Review Appropriate?	Observation
M2	M2FT-16SN080502012	QRL3	Status of Progress Made Toward Preliminary Design Concepts for the Inventory in Select Media for DOE Managed HLW/SNF		SAND2016-9823 R	Yes	Yes	Yes-DMS	Deliverable form: DOE Order 414.1 not marked, general record not marked, otherwise OK	Yes	N/A
M2	M2FT-16SN080503011	QRL3	Draft Program Plan for the Permanent Disposal of High- Level Radioactive Waste and Spent Nuclear Fuel from Defense and Department of Energy Research and Development Activities	FCRD-UFD-2016-000078	SAND2016-7053 R	ouo	Yes	OUO	Deliverable form: OK	Yes	N/A
M2	M2FT-16SN080503021	QRL3	Generic Organizational and Procedural Framework for DOE Managed HLW and SNF Licensing	FCRD-UFD-2016-000079	SAND2016-9091 R	Yes	Yes	Yes-DMS	Deliverable form: OK	Yes	N/A
M2	M2FT-16SN080504062	QRL4	Status of Progress Made Toward Safety Analysis and Technical Site Evaluations for DOE Managed HLW and SNF		SAND2016-11232 R	Yes	Yes	Yes-DMS	Deliverable form: DOE Order 414.1 not marked, general record not marked, otherwise OK	Yes	N/A
M2	M2FT-16SN090201031	QRL4	Insights from Surveys Related to Transportation and Siting of Nuclear Waste Facilities	FCRD-NFST-2016-000090	SNLPR530872	OUO	Yes	Yes	Deliverable form: OK	Yes	N/A

Page 15 of 16 Final 3/22//2017

ATTACHMENT 3 - CONCURRENCE DOCUMENTATION



Page 16 of 16 Final 3/22//2017